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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/651,820	08/30/2000	David S. Miller	PA876	2273

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
San Diego, CA 92121-1714

EXAMINER

D AGOSTA, STEPHEN M

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 03/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/651,820

Applicant(s)

MILLER ET AL.

Examiner

Stephen M. D'Agosta

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1,2. 6) ☐ Other: .

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DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "**method**" of claim 5 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3-5 rejected under 35 U.S.C. 103(a) as being unpatentable over Siwiak US Patent 5,640,166 in view of Sickles, II US Patent 3,940,695 (hereafter Siwiak and Sickles).

As per **claim 1**, Siwiak teaches an apparatus for frequency correction in a wireless communication system, wherein transmissions within the system experience a Doppler effect (Title), comprising:

A first frequency synthesizer for generating a carrier signal oscillating at a rate responsive to a first input (figure 2, #222),

Wherein said rate input adjusts over time according to a predetermined sequence so that said Doppler compensation signal compensates for said Doppler effect (Claim 2, Col. 6, L44-53 states that the circuit contains a memory for storing a plurality of Doppler compensation values for minimizing Doppler frequency shifts at a plurality of predetermined points which reads on the applicant's specification which

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states that a memory can be used to supply the desired sequence of values for rate input and initial value, Page 10, L13-15).

But is silent on

A counter coupled to said first input for generating a Doppler compensation signal, said counter having a clock input

A second frequency synthesizer coupled to said clock input for generating a clock signal oscillating at a rate responsive to a rate input

Sickles teaches the use of an up/down counter (figure 1, #34) in a Doppler correction system (title) where the output of the up/down counter is a digital signal indicative of the instantaneous contents of the counter (C3, L3-8).

Sickles also teaches the use of a clock (being connected to the up/down counter) as shown in figure 1, #38. The output of the counter eventually connects to a mixer (#86) and modulator/second synthesizer (#88). While Siwiak does not teach a clock circuit, it is evident that the overall design operates in a similar manner to that of the applicant's since data is received, the Doppler controller compensates for Doppler shift which is provided to the synthesizer and signal generator which connect to the downlink transceiver (ref. signal path in figure 2, right side of page).

It would have been obvious to one skilled in the art at the time of the invention to modify Siwiak, such that a counter and second synthesizer are used, to provide an accurate measurement/count of the Doppler offset and to provide a second synthesizer that can be optimized for its specific function (eg. its optimal frequency range is highly precise in the operational range(s) required).

As per **claim 3**, Siwiak teaches an system for frequency correcting transmissions between first and second transceivers in a wireless communication system to minimize Doppler frequency effects (title) comprising:

Carrier generating means in the first transceiver for generating a carrier signal oscillating at a rate responsive to a first input (figure 2, #228)

Doppler compensation means coupled to said carrier generating means for generating a Doppler compensation signal (figure 2, #216)

Rate input means coupled to said clock generating means and adjustable over time according to a predetermined sequence so that said Doppler compensation signal compensates for said Doppler effect (Claim 2, Col. 6, L44-53 states that the circuit contains a memory for storing a plurality of Doppler compensation values for minimizing Doppler frequency shifts at a plurality of predetermined points which reads on the applicant's specification which states that a memory can be used to supply the desired sequence of values for rate input and initial value, Page 10, L13-15).

But is silent on Clock generating means coupled to a clock input of said Doppler compensation means for generating a clock signal oscillating at a rate responsive to a predetermined rate.

Sickles also teaches the use of a clock (being connected to the up/down counter) as shown in figure 1, #38. While Siwiak does not teach a clock circuit, it is evident that the overall design operates in a similar manner to that of the applicant's since data is received, the Doppler controller compensates for Doppler shift which is provided to the

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synthesizer and signal generator which connect to the downlink transceiver (ref. signal path in figure 2, right side of page).

It would have been obvious to one skilled in the art at the time of the invention to modify Siwiak, such that the clock is coupled to the Doppler compensation means and generates a clock signal oscillating at a rate responsive to a predetermined rate, to provide means for the system to quickly calculate/determine and correct for Doppler shifts.

As per **claim 4**, Siwiak teaches claim 3 wherein the wireless system comprises a satellite communication system (title) including an earth-based gateway incorporating the first transceiver (figure 2, left side of page), satellite incorporating the second transceiver (figure 2, right side of page) and a user terminal (figure 2, bottom left side of page)

As per **claim 5**, Siwiak teaches a method for frequency correction of Doppler effects in a wireless communications system (title) comprising:

Generating a carrier signal oscillating at a rate responsive to a first input (figure 6, #624)

Generating a Doppler compensation signal (figure 6, #608, #614 and #618)

Adjusting said rate input over time according to a predetermined sequence so that said Doppler compensation signal compensates for said Doppler effect (Claim 2, Col. 6, L44-53 states that the circuit contains a memory for storing a plurality of Doppler compensation values for minimizing Doppler frequency shifts at a plurality of predetermined points which reads on the applicant's specification which states that a memory can be used to supply the desired sequence of values for rate input and initial value, Page 10, L13-15). .

But is silent on Generating a clock signal oscillating at a rate responsive to a rate input.

Sickles also teaches the use of a clock (being connected to the up/down counter) as shown in figure 1, #38. While Siwiak does not teach a clock circuit, it is evident that the overall design operates in a similar manner to that of the applicant's since data is received, the Doppler controller compensates for Doppler shift which is provided to the synthesizer and signal generator which connect to the downlink transceiver (ref. signal path in figure 2, right side of page).

It would have been obvious to one skilled in the art at the time of the invention to modify Siwiak, such that the clock oscillates at a rate responsive to a rate input, to provide means for for the system to quickly calculate/determine and correct for Doppler shifts.

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Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over

Siwiak/Sickles further in view of Jensen et al. US Patent 5,745,072 (hereafter Jensen).

As per **claim 2**, Siwiak teaches claim 1 wherein the wireless system comprises a satellite communication system (title) including an earth-based gateway (figure 2, left side of page), satellite (figure 2, right side of page) and a user terminal (figure 2, bottom left side of page)

But is silent on said frequency correction apparatus is located at said earth based gateway.

Jensen teaches a Doppler extractor located at the ground station (Figure 1).

It would have been obvious to one skilled in the art at the time of the invention to modify Siwiak, such that the frequency correction apparatus is located at said earth based gateway, to provide Doppler compensation means both on the ground and in the air.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1. Jensen et al US Patent 5,995,039 teaches Doppler tracking of a spacecraft.
2. Kremm et al. US Patent 5,943,606 teaches determination of frequency offset
3. Blanchard et al. US Patent 5,874,913 teaches Doppler compensation
4. Siwiak et al. US Patent 5,432,521 teaches Doppler shift tracking
5. Bucher et al. US Patent 5,696,797 teaches Doppler shift compensation
6. Gourgue US Patent 5,471,648 teaches Doppler frequency correction.
7. Rieger US Patent 4,872,164 teaches Doppler effect in TDMA.
8. Mack et al US Patent 4,001,690 teaches compensation for Doppler effect.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Hunter can be reached on 703-308-6732. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist on telephone 703-306-0377.

SMD
March 7, 2003

THANH CONG LE
PRIMARY EXAMINER